

Historic, Archive Document

Do not assume content reflects current scientific knowledge, policies, or practices.

9
N 83 Et
eserve

United States Department of Agriculture
Agricultural Research Administration
Bureau of Entomology and Plant Quarantine

LIBRARY
CURRENT SERIAL RECORDS
NOV 12 1952
U.S. DEPARTMENT OF AGRICULTURE

X A FRAMELESS INSECT CAGE FOR USE ON TREES X

By Robert Z. Callaham and John M. Miller^{1/}
Division of Forest Insect Investigations

The frameless cage described herein was constructed and used for caging bark beetles on the basal 10 feet of small trees. Most of the trees were 12-14 inches in diameter, but some were as large as 24 inches. The primary advantages of this cage are: (1) It costs less and is easier to install than a frame cage; (2) there is no problem of sealing the cage to make it insect tight; and (3) off-season storage of the cage requires a smaller area than that needed for frame cages.

This frameless cage can be made to cover any portion of a tree or other elongated object by varying the number and length of the sections of screen that are fastened together. It can be made with a flap at the bottom, which can be closed in the same manner as the top and thus permit the caging of any desired portion of the tree, or the lower flap can be buried in the ground.

Materials

The cage may be made of either plastic or metal screen. Plastic screen has the advantages of being light in weight, not subject to moisture damage, and of having only a negligible effect on the environment in the interior of the cages. On the other hand, metal screen is cheaper and provides more rigidity, thereby facilitating installation and eliminating the need for supporting wires or hoops.

Construction

Both the plastic and metal cages are fabricated on the same general plan from strips of screening cut to any desired width or length. The plastic cage has both top and bottom flaps made of the same material, but the top flap of the metal cage is of canvas.

^{1/} Deceased.

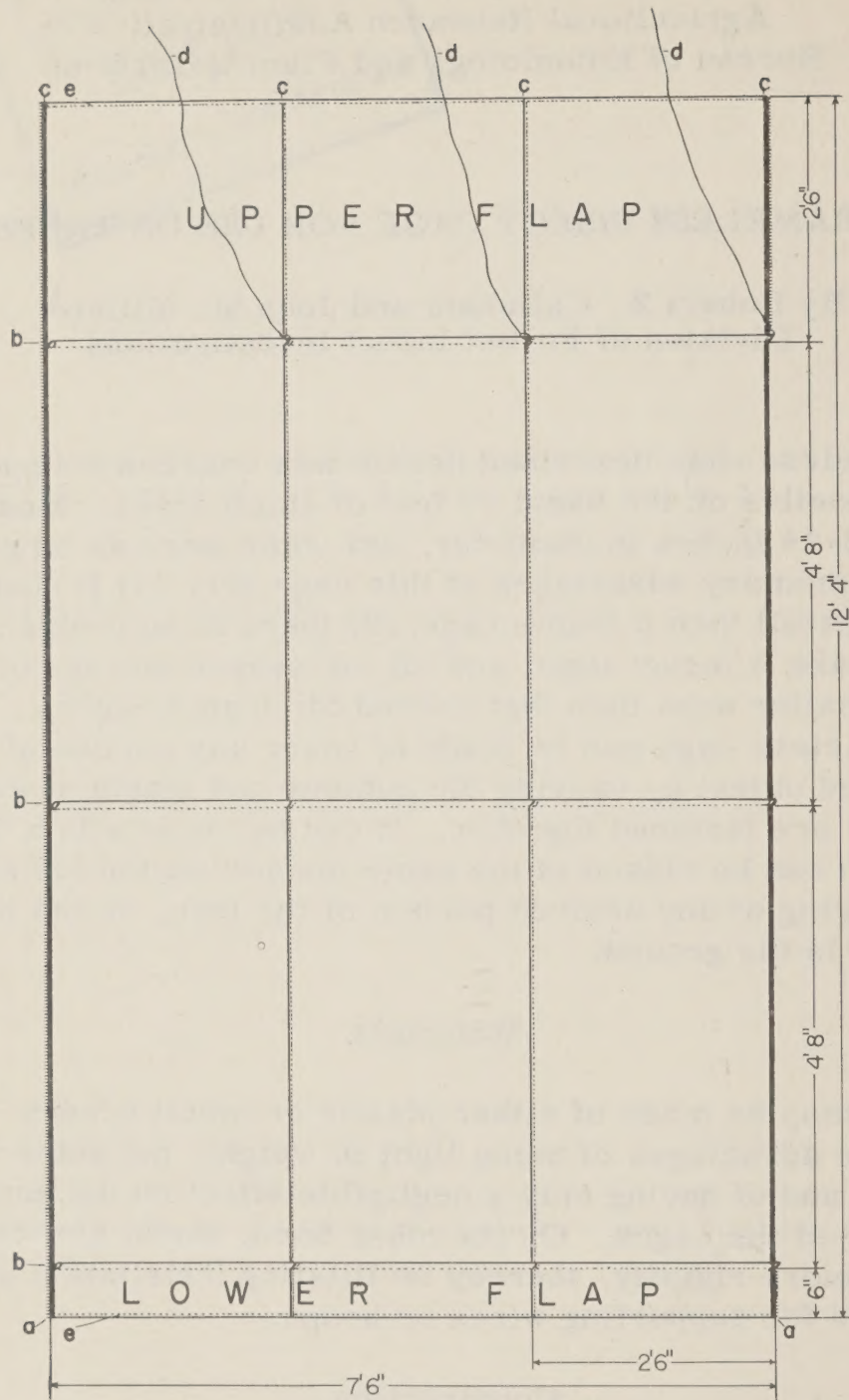


Figure 1.--Pattern for a frameless plastic-screen cage.

- | | |
|---|---|
| a. Zipper halves. | d. Supporting wires. |
| b. Pocket for hoop wires made with
a single row of stitches. | e. Single row of stitches to prevent
unraveling of screen. |
| c. Double row of stitches. | |

A pattern for the plastic cage is shown in figure 1. First, the strips of screening are joined along the selvage by two parallel rows of stitches with cotton thread. If 28-mesh screen is used, no additional support is needed on the seams, but with screen of larger mesh it may be necessary to back the seams with cloth tape or webbing. Second, cross-pockets 1 inch deep for insertion of wire hoops are made with a single row of stitches, and another row of stitches is made across the top and bottom of the cage to prevent the screen from unraveling. Finally, two zipper halves are sewed in place on the sides of the cage.

The construction of a metal cage requires only a slight modification of the pattern shown in figure 1. The only tools needed are a hammer, brace and bit, and a heavy-duty stapler. The lengths of screen are nailed together along the selvages between two wooden cleats that are 1/2-inch thick, 1-inch wide, and about 6 inches shorter than the screen. For closing the cage, holes for 1/4-inch carriage bolts are drilled at regular intervals in two other cleats, which are nailed to the free sides of the cage. A strip of canvas is stapled to the upper edge of the screen to form the upper flap.

Installation

This cage can be easily installed. Two men work with 10-foot ladders on opposite sides of the tree. Approximately 2 man-hours are required for the installation of each type of cage.

The first operation is to smooth the bark with a drawknife where the top of the cage is to be placed. A strip of cotton batting 3 or 4 inches wide is placed around the tree at this point and tied with string. Then the cage is wrapped around the tree and, if it is a plastic cage, the supporting wires (Nos. 14 and 15 wire) are fastened to the lower limbs or to the tree trunk above the upper closure and the zipper closed. If it is a metal cage, the carriage bolts are passed through the holes in the cleats and fastened. The ends of the hoop wires in the plastic cages are looped over one another to keep the cage away from the tree. The upper flap of the cage is gathered around the tree and tied in place on the cotton batting with two or three lengths of string to prevent the escape of bark beetles. This flap and cotton-batting technique can be used to make a similar closure at the bottom of the cage, or dirt can be placed on the lower flap.

To place insects in the cage, one can remove a small portion of the dirt, lift the flap, place the insects on the ground inside the cage, and replace the dirt on the flap. Sometimes a log containing bark beetle broods is wired to the tree within the cage.

Installation of both types of cage, with logs containing bark beetle broods, is shown in figure 2.

Dismantling

One man can easily dismantle and roll up one of these cages in 10 minutes by the following steps: (1) The supporting wires and upper flap ties are cut; (2) the side closure is opened; (3) the hoop wires are unfastened and straightened; and (4) the cage is rolled for storage (fig. 3). Nine or ten of these cages can be stored in a space 10 by 3 by 2 feet.



Plastic cage



Metal cage

Figure 2.--Cages installed on basal portions of small pines.

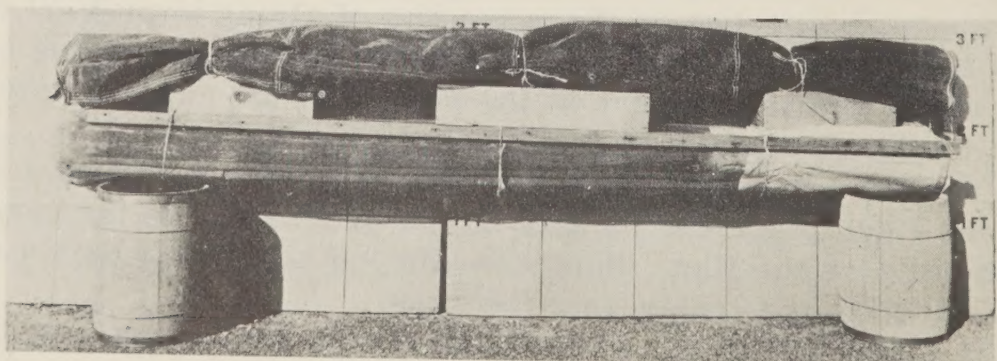


Figure 3.--Plastic (upper) and metal (lower) cages ready for storage.